



**KAP CONFERENCE 15/3/07**

**CHEMOTHERAPY - RELATED  
TUMOUR LYSIS SYNDROME**

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## **Definition**

**Two types of tumour lysis syndrome (TLS) ;**

### **1. Laboratory TLS:**

- **25% increase in potassium,phosphate and uric acid,or decline in calcium from baseline .**
- **Occur within 4 days of initiating chemotherapy.**
- **Patients on standard of care.**
- **Minimum of two out of four criteria.**

## 2. Clinical tumour lysis syndrome

Laboratory TLS plus renal failure, cardiac arrhythmias or sudden death .

- ❖ A new definition has been suggested by Cairo and Bishop to include values above upper limit of normal.
- ✓ Study used Hande and Garrow definition.

# PREDICTORS OF TLS

- Tumor factors
- Treatment factors
- Patient factors

– Postgrad Med J.1981;57:727-729

## STUDIES ON TLS

	Incidence	References
<i>Hyperuricemia</i>	14%-70%.	Haas1999 emedicine.com2003
<i>Azotemia</i>	3- 7.5%	Carl et al, Arch Inter Med.1974;133:349-359
<i>Hyperkalemia, Hyperphosphatemia and hypocalcaemia</i>	11-38%	Cohen et al Am J Med1980;68:486-91

# METHODOLOGY

- Serum potassium, phosphate, uric acid and calcium were determined on day 1 and then 24 hourly for 4 days.
- Tests were repeated on the 7<sup>th</sup> day in those developing TLS to check resolution.
- If no resolution, tests were repeated on the 15<sup>th</sup> day.

# METHODOLOGY CTD

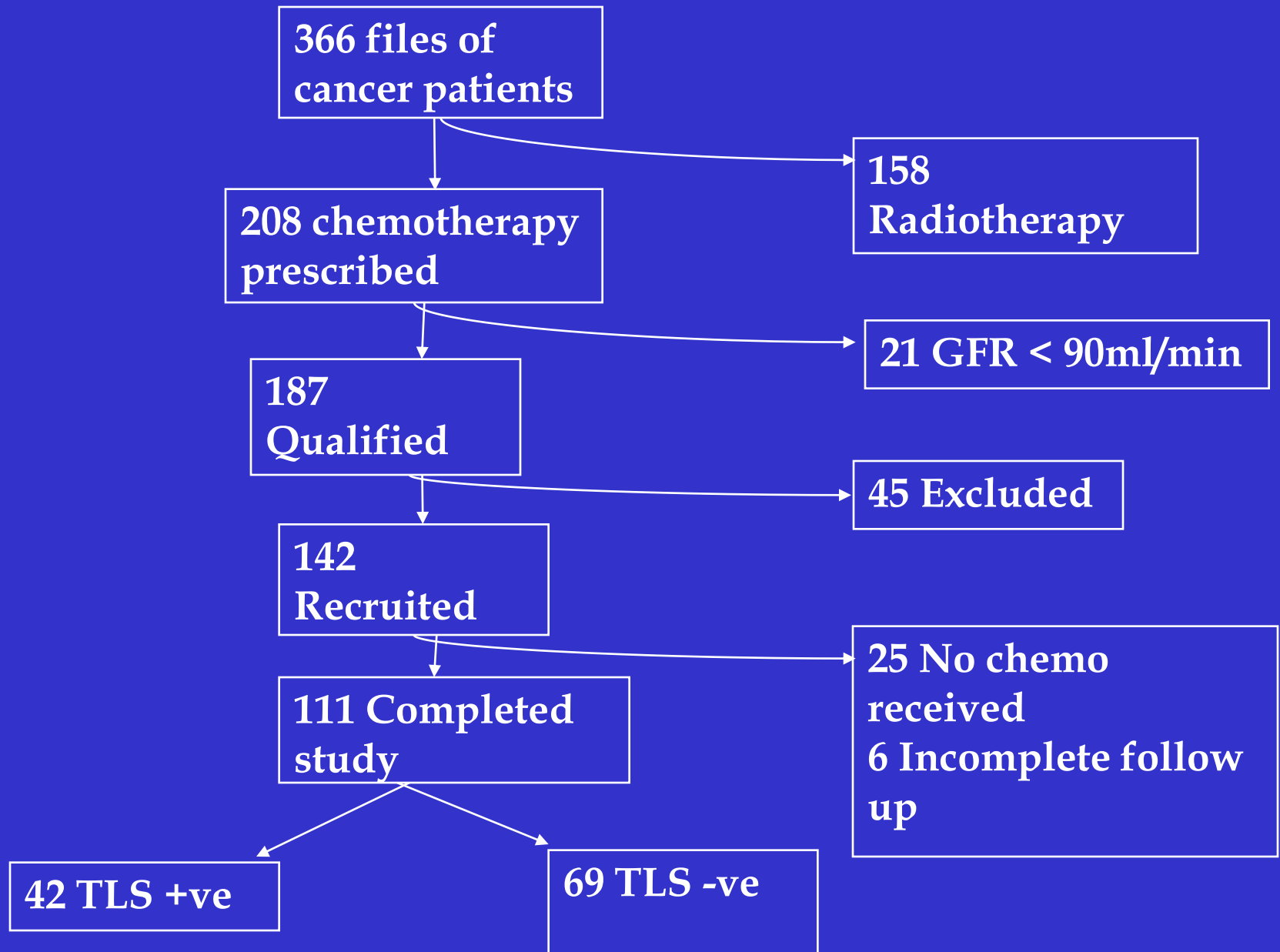
## Inclusion Criteria

- Patients aged 13 years and above
- Tissue diagnosis of cancer.
- Patients receiving the first course of chemotherapy.

## Exclusion Criteria

- Patients on treatment for gout.
- Post-renal transplant patients.
- Unwillingness to come back to the Hospital for four consecutive days.
- Dehydrated patients .

# Flow Chart



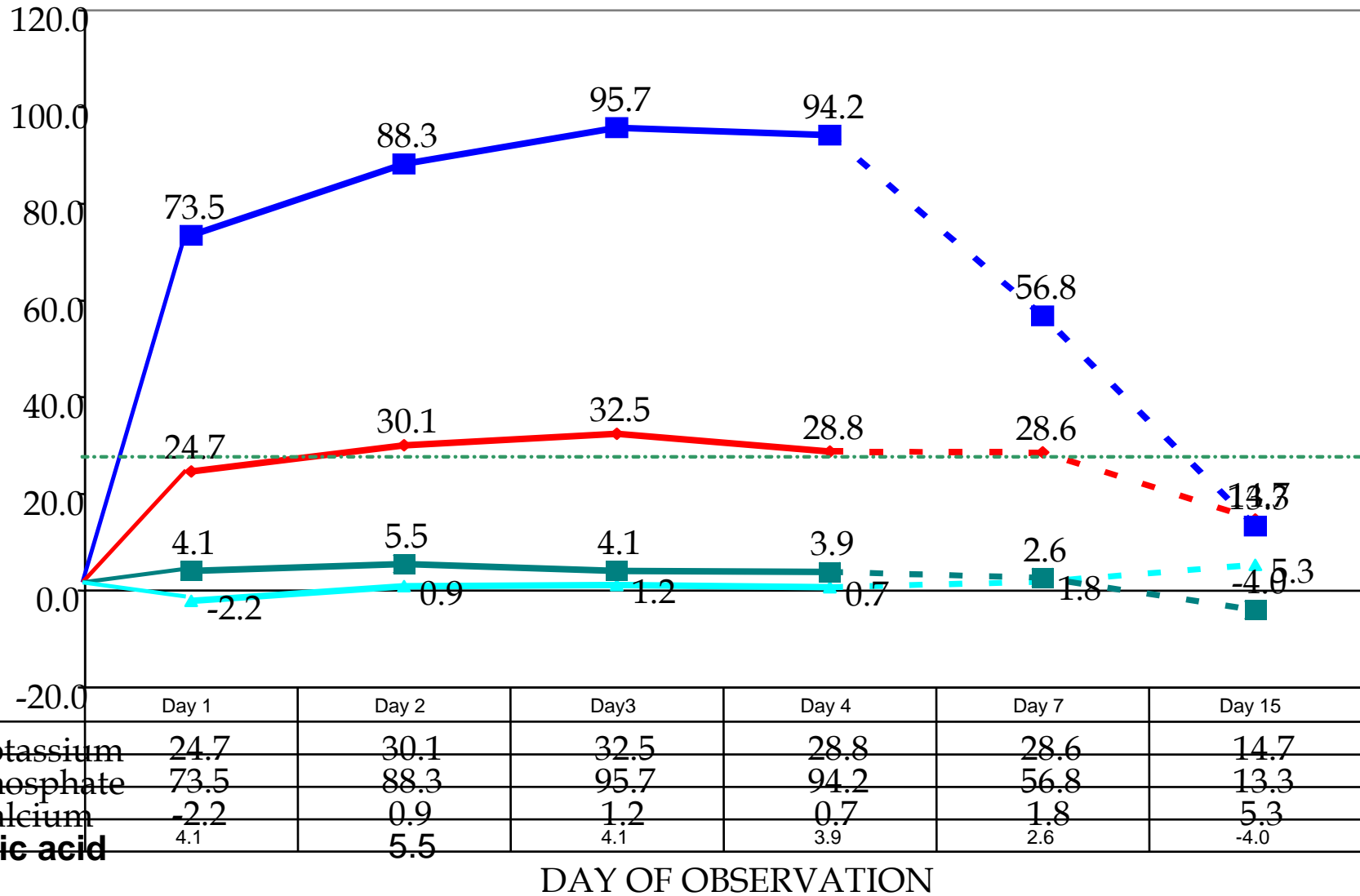


# RESULTS

<b>TUMOUR</b>	<b>Number</b>	<b>STAGE</b>
<b>Non-Hodgkin's lymphoma</b>	<b>8 7 3</b>	<b>IV III II</b>
<b>Hodgkin's lymphoma</b>	<b>2 4</b>	<b>IV III</b>
<b>Chronic lymphocytic Leukemia</b>	<b>8</b>	<b>IV</b>
<b>Breast cancer</b>	<b>18 17 9 1</b>	<b>IV III II I</b>
<b>Others</b>	<b>13</b>	<b>IV</b>
<b>No staging (AML,ALL,MM)</b>	<b>21</b>	<b>-----</b>
<b>Total</b>	<b>111</b>	<b>-----</b>

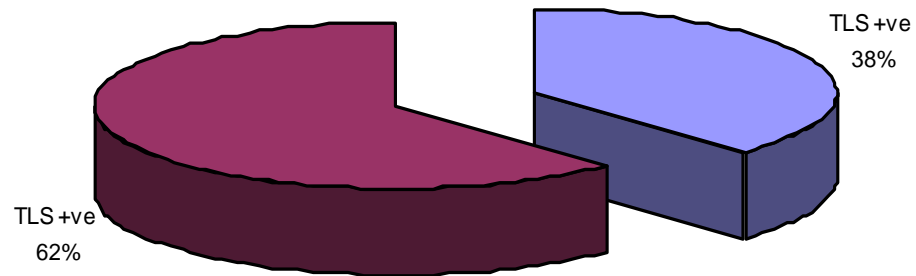
# SERUM ELECTROLYTE CHANGES

PERCENTAGE MEDIAN CHANGE



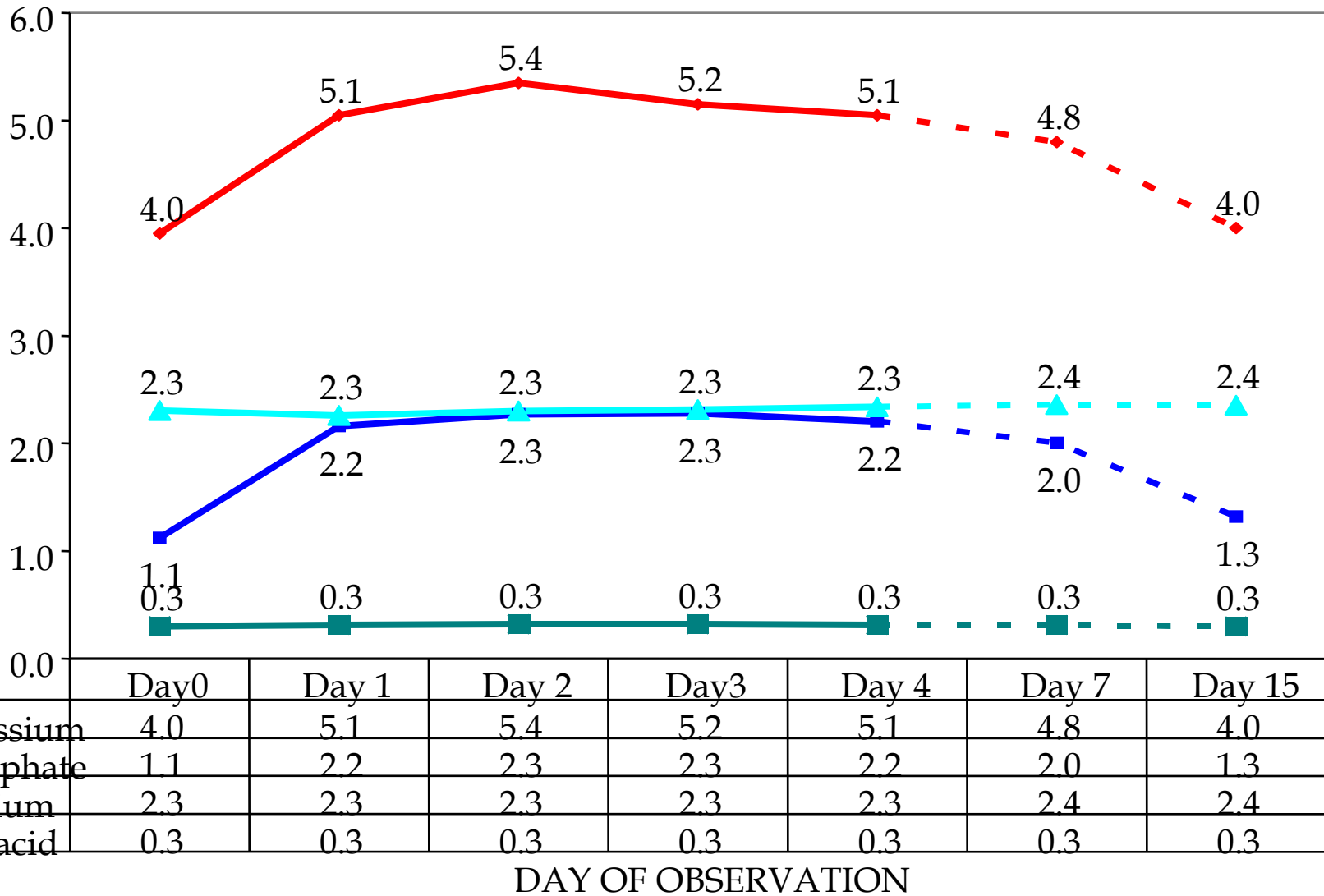
# INCIDENCE OF TLS

$42/111 = 37.83\%$ , 95% C.I= 28.81-46.85



# SERUM ELECTROLYTE CHANGES

MEDIAN ELECTROLYTE LEVEL



# TLS IN HAEMATOLOGICAL AND NON-HAEMATOLOGICAL TUMOURS

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	HAEMATOLOGICAL	NON HAEMATOLOGICAL	TOTAL	P VALUE
POSITIVE	40 (75.47%)	2 (3.45%)	42	<0.001
NEGATIVE	13 (24.53%)	56 (96.55%)	69	
TOTAL	53 (100%)	58 (100)	111	

## **DISCUSSION**

- ❖ Incidence of TLS found in this study was 37.8%.
- ❖ About 720 patients receive chemotherapy annually.
- ❖ This means that about 273 patients are at risk of TLS per year.
- ❖ Case fatality rate of 4.76% may translate to 13 deaths per year.
- ❖ Preventable and treatable condition

## DISCUSSION CTD


- Association between potassium and phosphate quite remarkable. Need for further study
- The absence of hyperuricemia is unusual
- Use of allopurinol prophylaxis in all the patients at risk
- Could the results have been different without allopurinol prophylaxis?
- ❖ Moderate hyperphosphatemia was insufficient to cause hypocalcemia



## **CONCLUSIONS:**

- ✓ **Tumour lysis syndrome is common at KNH (38.7%). It mainly occurs in haematological malignancies.**
- ✓ **Most cases of tumour lysis syndrome occur on the first day of chemotherapy.**
- ✓ **Hyperkalemia and hyperphosphatemia are the main manifestations of TLS at KNH.**

## **RECOMMENDATIONS:**

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- 1) All patients with haematological malignancies receiving chemotherapy should have their electrolytes monitored for at least two days after initiation of therapy.**
  - 2) Patients who cannot afford to pay for uric acid, calcium, phosphate and potassium can be monitored for hyperkalemia alone.**
  - 3) Allopurinol prophylaxis should be continued.**
  - 4) Continuous retrospective analysis of TLS data.**

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- KONGOI MISSING FOR LISTENING